



Telecom Notice of Consultation CRTC 2009-194

Call for comments - Nomadic VoIP E911 service

Comments of

**Cogeco Cable Inc., Rogers Communications Inc., Shaw
Communications inc., and Quebecor Media Inc., on
behalf of its affiliate Videotron Ltd.
(collectively, the Cable Carriers)**

November 6, 2009

Introduction

1. The following comments are submitted on behalf of Cogeco Cable Inc., Rogers Communications Inc., Shaw Communications Inc. and Quebecor Media Inc., on behalf of its affiliate Videotron Ltd. (collectively the “Cable Carriers”) in accordance with the procedure established in Telecom Notice of Consultation 2009-194, as amended.

The Relevance of the Canadian i2 Architecture – Market Developments

2. In 2005, the Canadian Radio-television and Telecommunications Commission (CRTC) concluded that the market for Nomadic Voice over Internet Protocol (Nomadic VoIP) telephony services was in the ascendency.
3. At paragraph 25 of Telecom Decision 2005-28, *Regulatory Framework for Voice Communications Services Using Internet Protocol*, the Commission stated the following:

“Based on evidence filed during this proceeding, it is evident to the Commission that there is widespread interest on the part of major ILECs, CLECs, cable companies and other service providers in providing a variety of VoIP services, with a range of different features, to residential and business customers. At the time of the oral consultation, Bell Canada, TELUS, SaskTel, Call-Net, Woods Lake Cable, Primus, Vonage, and Yak, for example, were all offering one or more types of VoIP service. Many other participants also indicated their intention to begin offering VoIP services. It is evident to the Commission, from parties’ responses, that current and potential service providers anticipate significant growth in VoIP services” [emphasis added].

4. Furthermore, during the proceeding which led to Telecom Decision 2007-125, Bell Aliant Regional Communications, Limited Partnership, Bell Canada, Saskatchewan Telecommunications, and TELUS Communications Company

(collectively, the Companies) filed data on the number of Nomadic VoIP customers in Canada, indicating that the market would grow by some 15% per year, over the next five years.

5. In the current proceeding, the Companies have again filed data showing the total Nomadic VoIP subscribers and forecasted growth rates over the next five years. The Cable Carriers note that the numbers provided are identical to those filed in 2007. Based on this, the Cable Carriers can only assume the Companies have not seen any change in the number of Nomadic VoIP customers over the past two years or a change to competitive conditions that would impact the anticipated growth rate for Nomadic VoIP services.

6. In response to a deficiency request filed by Cogeco¹, the Companies stated their reasons for filing the same market data for 2009 as filed in 2007 was related to 'uncertainty concerning nomadic VoIP growth statistics', and the fact that 'no reliable nomadic VoIP statistics exists today'. The Companies further explained that, if they were to have commissioned any studies to assess this market segment, such 'studies or assessments the Companies may have made or commissioned with regards to the Canadian or North American VoIP market constitute competitively sensitive commercial information'. In other words, the size of this market segment was a mystery for some of the largest telecommunications companies in Canada in 2007 when the Canadian i2 Architecture was first proposed, and remains a mystery to this date.

7. The Cable Carriers submit that, based on the foregoing, this proceeding has become a textbook case of how not to make a well informed regulatory decision. The Cable Carriers submit that the Companies are asking the CRTC

¹ See supplemental response to: The Companies(Cogeco)28Aug09-1 TNC 2009-194, dated 23 October 2009.

to proceed with the implementation of the proposed Canadian i2 Architecture without benefit of any reliable market data to substantiate the need for this solution in the Canadian telecommunications market at this time. As such, the Cable Carriers find this situation reprehensible and frankly irresponsible on the part of the Companies.

8. In order to address this deficiency on the part of the Companies, the Cable Carriers have commissioned their own market research on the Nomadic VoIP industry in Canada. Unlike the Companies, the Cable Carriers are prepared to share the results of this research with the Commission and interested parties as we strongly believe that any action taken by the regulator should be based on facts, not supposition, guesswork or hearsay. The results of this research – which include a survey of Canadians – are provided in Annex A under the title “Access Independent VoIP Penetration and Nomadic Usage in Canada” (hereafter referred to as the LYA Report).

9. The findings of the LYA Report reveal the following portrait of the Nomadic VoIP market in Canada:
 - a. Based on the survey, there are approximately 250,000 households in Canada that subscribe to a Nomadic VoIP service, or slightly less than 2% of all Canadian households. While the CRTC’s own data found 153,000 customers in 2008 and 161,000 customers in 2007, the LYA Report results show a larger total of customers likely due to the inclusion of more service providers than the CRTC sampling.
 - b. Of the total Nomadic VoIP subscribers noted above, 36%, or 90,000 households are using a Nomadic VoIP service as their principal fixed home telephone line.
 - c. In addition, of the total Nomadic VoIP subscribers, only 4%, or 10,000 customers, actually travel with their phone adapter.

- d. Compared to Nomadic VoIP services, the survey revealed that in Canada today, 800,000 persons, or 3.9% of Canadians, use a softphone on their personal computer of which more than 95% are subscribing to Skype to communicate with friends and relatives across Canada, and around the world.
- e. By contrast, over 20% of Canadians who subscribe to a softphone (Skype) service use this service while travelling, and further, over 70% of those surveyed choose to use a cellphone when travelling rather than any other wireline service.
- f. The survey also revealed that, rather than leveraging the portability of the service, the majority of Canadian customers subscribing to Nomadic VoIP services are using it as a complement to another fixed local service, in particular, as a means to make more cost effective long distance calls.

10. In addition to the survey results, the market research reveals a market in decline, rather than one in the throes of expanding. To illustrate this point, the Cable Carriers provide the following examples:

- a. Major service providers have taken the decision to exit the market for Nomadic VoIP service altogether. Examples include Verizon in the United States, and Bell Canada in Ontario and Quebec. A more recent example is that of SaskTel which sold its Navigata communications division. When asked for comments on the decision to sell Navigata, Mr. Robert Watson, President of SaskTel stated that VoIP "(...) really didn't take off," and further added that VoIP remains a niche service eclipsed by wireless technology.²

² See The Saskatoon StarPhoenix, October 20, 2009.

- b. The largest Nomadic VoIP service provider in North America, Vonage Holdings Corp. (Vonage) has seen consistent declines in its total customer base as well as declines in its net adds, year over year, quarter over quarter. In an attempt to remain relevant in the Internet voice segment, it has introduced a free application for the iPhone and Blackberry to permit customers to utilize their mobile phones for making more cost effective international calls. In addition, the company is withdrawing from the Canadian market, having closed down their customer care centre in Canada and laid off employees.³
- c. On the point of mobility, there has been a veritable explosion of applications developed for various mobile devices, most notably of which are applications which convert a smartphone into an Internet phone, bypassing the wireless provider's network in favour of routing voice calls via the Internet.

11. As the results from the LYA report demonstrate, the total market size for Nomadic VoIP services in Canada is not 200,000 as the Companies state but rather, 90,000 subscribers who are using such services as a local, fixed line replacement service. The other 160,000 subscribers are using their Nomadic VoIP service as a complement to other services in the home, mainly to reduce the cost of long distance calling. In addition, of the total subscribers identified above, only 10,000 subscribers actually use the nomadic feature of the service and travel with their adapter, a tiny fraction of the total.

³ See page 8 of Vonage Holdings Corp. Second Quarter, 2009 Financial Results presentation, August 5, 2009.

12. Using the data above, and using the original cost estimate⁴ to the Canadian industry to implement the proposed Canadian i2 Architecture, the cost per VoIP subscriber would be \$30,000.00 based solely on those that are using this service in a nomadic manner. This is a huge investment to address a market segment in decline.

13. The record of this proceeding has also been completely silent on the level of calls coming into Canada's 9-1-1 public safety answering points (PSAPs). The Companies have kept the CRTC, and interested parties, completely in the dark with respect to how many actual calls from Nomadic VoIP customers the PSAPs receive. Similarly, the PSAPs have been unhelpful in this regard, keeping their call statistics tightly controlled and in confidence, choosing instead to highlight a few, choice incidents (with no context or indication of the number of similar incidents which may have arisen from calls from wireline and wireless customers) in order to impel the regulator to take action.

14. The Cable Carriers have thus turned to the United States in an attempt to get a sense of the source of 911 calls and trends. Of the data publicly available, these data indicate that the total number of calls received from Nomadic VoIP customers by PSAPs is small and declining. For example, in Genesee County, New York, a little over 45% of all the calls they receive are from wireless phones, while only 0.0064% are from Nomadic VoIP customers. Further, the total number of calls they have received from Nomadic VoIP customers has declined from 2007 to 2009.⁵ In Dane County, Wisconsin, for the whole of 2008, they received 558 calls from Nomadic VoIP customers versus 118,000 from wireless customers and 55,000 calls from wireline

⁴ See the Cable Companies 9 July 2008 Final Comments, paragraph 7, in which the Cable Carriers estimated the cost of implementing the Canadian i2 architecture at over \$300 million to the Canadian telecommunications industry.

⁵ See <http://www.geneseecounty911.org/stats.htm>

customers.⁶ Further, while the number of calls originating from wireless phones continues to increase, the calls from Nomadic VoIP customers' remains stable or is in decline.⁷

15. Clearly the market for Nomadic VoIP services is in decline and being eclipsed by significant market developments such as softphones like Skype (a market currently twice the size of the Nomadic VoIP market), a major subscriber base that will not even benefit from the proposed Canadian i2 Architecture.

16. The Cable Carriers submit that the proposed Canadian i2 Architecture has clearly been outpaced by market and technological developments, and simply does not address where the market for Internet communications is heading. Based on the data available, the current market for Nomadic VoIP is much smaller than originally thought, and further, is in decline as service providers shutter their service offerings or continue to see declines in their customer bases. The Cable Carriers are therefore concerned that, if they were to begin work at implementing the technical solution as proposed by the Companies, by the time it would be constructed, tested and implemented, the industry for which it is intended will have, in the interim, become almost irrelevant and immaterial and the solution will only address only a tiny fraction of emergency calls made by Canadians. The Cable Carriers believe this to be a highly inefficient allocation of scarce resources.

⁶ See <http://www.dane911.com/statistics.aspx>

⁷ Ibid.

The Relevance of the Canadian i2 Architecture – Technological Developments

17. In addition to the LYA Report contained in Annex A, the Cable Carriers have also asked Cable Television Laboratories Inc. (CableLabs) to assess the feasibility of the proposed Canadian i2 Architecture and its relation to other standards work being conducted in other fora, such as the National Emergency Numbering Association (NENA).
18. In their report, attached to these comments as Annex B, CableLabs examines a number of the key assumptions and variables in the proposed Canadian i2 Architecture as they relate to location determination and delivery of said to the PSAPs. In particular, the CableLabs Report addresses some technological developments which were not considered by the Companies when they developed their solution, namely Network Access Translation (NAT) devices to address the coming exhaustion in IPv4 addresses, Virtual Private Network (VPN), VoIP over IPsec tunnels and mobile IP.
19. In assessing the proposed Canadian i2 Architecture in relation to the technological developments noted above, the CableLabs Report concludes that:
- “The location determination and delivery model proposed in the Canadian i2 model provides the ability for VSPs and ISPs to deliver accurate location information in some scenarios. There are, however, a number of valid deployment scenarios in which location cannot be provided at all. In order to address these failure cases, service providers would need to spend a significant amount of time, money and effort to re-architect their network and work with vendors and SDOs [Standards Development Organizations] to develop solutions for ensuring the source IP address of the VoIP client is propagated through the VoIP network to the emergency provider” [emphasis added].*

20. In particular, the CableLabs Report points out that, as the pool of available IPv4 addresses shrinks, Internet Service Providers (ISPs) are planning to deploy service provider NATs in order to extend the usable IPv4 address pool and to ease the transition to an IPv6 address pool. This development alone has significant and longstanding implications on the solution proposed by the Companies. For example, the implementation of a NAT at the service provider level would affect the amount of data transmitted to the LIS, as the LIS would have to track, in real time, every NAT binding created, forcing the LIS platform to be considerably larger in scope in order to assimilate the volume of traffic.⁸ In a similar manner, the deployment of home NATs raises similar issues related to the amount of data to be processed by a LIS, as well as the ability of the proposed Canadian i2 Architecture to locate the Nomadic VoIP customer when making a 911 call.

21. As indicated by the CableLabs Report, the more widespread use of Mobile IP protocols, showing up in the deployment of a soft client on another device, such as a smartphone or laptop (confirmed by the market data above showing the strong adoption of Skype), raises considerable technical challenges regarding the identification of the visitor network location when such devices are used, challenges that the proposed Canadian i2 Architecture is incapable of addressing.

22. As a consequence of the NAT issue, and the others mentioned in the CableLabs Report, the Cable Carriers submit that the proposed Canadian i2 Architecture is behind the times and cannot address the rapid evolution in ISP networks. Further, the amount of extra development that would be required to implement the proposed Canadian i2 Architecture with the limitations highlighted by the CableLabs Report would be considerable:

⁸ CableLabs, 'Analysis of Canadian i2 Location Determination and Delivery Model', page 9.

“Given the amount of engineering and software development effort required to address the failure cases, a question should be raised on whether promotion of an OBO model due to the absence of location aware VoIP endpoints is actually a good use of engineering resources, or whether that effort should be channelled toward the development of location aware endpoints.”⁹

23. The Cable Carriers submit that the point raised by the CableLabs Report concerning location-aware devices is a key element in this debate. The entire premise of the NENA i3 standard, as mentioned in previous submissions, is the deployment of endpoints which are location-aware. Standards bodies around the world are focussing their effort on developing this standard rather than on an interim solution which no one else in the world will support nor implement:

“Development and deployment of location aware endpoints would alleviate the limitations identified in the deployment scenarios above (with the possible exception of the Mobile IP deployment scenario) and is the focus of not only the NENA i2 and i3 architectures, but also the IETF and 3GPP IMS. However, it is important to acknowledge that location aware endpoints do not solve all problems and still require the deployment of location aware infrastructure (e.g., home routers, updated DHCP servers to pass location data).”¹⁰

As shown in the CableLabs Report, perhaps the more logical route for Canadian policy-makers and solution providers is to focus their collective energies on ensuring that Canada is not left behind the rest of the world when it comes to the latest standards development and deployment of location-aware endpoint devices into Canadian homes.

24. The Cable Carriers submit that, because of the evolution in the market and in communications solutions offered to Canadian consumers who increasingly use means of communication other than Nomadic VoIP solutions, and the increasing limitations of the proposed Canadian i2 Architecture in light of the rapid evolution of ISP networks, the CRTC needs to take a radical step back from the threshold of making a bad regulatory decision that will be expensive

⁹ Ibid, page 12.

¹⁰ Ibid, page 12.

to implement while not meeting the Commission's objectives of making Canadians safer.

Alternative Solutions for the Provision of E9-1-1 to Nomadic VoIP Service Providers

25. At paragraph 17 of TNC 2009-194, the Commission invited interested parties to make further submissions of alternative solutions that would improve on the current Nomadic VoIP 9-1-1 service. In response, the Cable Carriers proposed a number of alternative solutions. These alternatives generally can be described as falling into two categories: (1) an enhanced version of the existing Nomadic VoIP 9-1-1 service and (2) "real-time query" proposals. The Cable Carriers consider that both alternative proposals are superior to the proposed Canadian i2 Architecture that has been assessed to date in terms of cost effectiveness and quicker implementation. The Cable Carriers further note that the proposed "solution" fails to function with certain network types (e.g. fixed wireless networks) and configurations (e.g. use of remote virtual private networks), and has not even been evaluated for use with other network types (e.g. MPLS). In the case of MTS Allstream, 70% of the accesses in Manitoba do not support the implementation of the proposed Canadian i2 Architecture.¹¹

IP Tracker Alternative

26. Although subscribers of VoIP service are supposed to update their location information with the VoIP operator's emergency services call centre or online, some subscribers fail to do so; hence this proceeding. The Cable Carriers submit that the Commission should not lose sight of the fact that updating

¹¹ MTS August 7, 2009 Submission, paragraph 11 and MTSAllstream(CRTC)28Aug09-303.

location information is a requirement of the service and customers are or should be aware of this requirement. The VoIP operators have put procedures in place to permit the 9-1-1 service to operate properly so long as subscribers fulfill these requirements. Thus far, the extended record of the nomadic VoIP 9-1-1 service proceeding is that it will cost Canadian carriers around \$300 million to implement and operate the proposed Canadian i2 Architecture that will, in some, but certainly not all, cases provide the information that subscribers themselves are otherwise required to provide as a condition of using the service.

27. In light of these circumstances, the Cable Carriers would note that Rogers has submitted an enhancement to the current nomadic VoIP 9-1-1 service. This enhanced solution leverages the existing 9-1-1 procedures that VoIP Operators have established with third party emergency call centres to receive and process subscriber location information. The enhancement involves VoIP operator deployment of an "IP Address Tracker" server with a simple software application that identifies material changes in the location of the VoIP operator's Analog Terminal Adaptor (ATA). When a material change in location is identified the application forces the routing of the customer's next outgoing call to the VoIP operator's nomadic 911 Call Centre to verify their current address information. The details of the proposal are described in Attachment 2, "Rogers Preferred "IP Tracker" Alternative Proposal", of Rogers August 7, 2009 submission. The other large Cable Carriers, Cogeco, Quebecor Media and Shaw, have all supported this alternative.

28. The Cable Carriers submit that this alternative proposal provides an efficient and effective solution that supplements and improves the 'interim solution' ordered by the Commission in Telecom Decision CRTC 2005-21. The proposal ensures more complete and accurate real time location identification and meets the objective of this proceeding. The solution is attractive because

it can be quickly implemented and imposes very small costs on the VoIP service providers who are the entities that require the solution. Costs are not incurred by the non-VoIP telecommunications service providers (ISPs, ASPs or 911 SPs) or by PSAPs.

29. This alternative solution is also attractive because it could serve as a bridge for the next few years until NENA has finalized its i3 standard for the United States. This standard may provide for standardized, cost effective nomadic VoIP 911 functionality across North America supported by multiple vendors. These standards are being targeted for completion in the 2011/12 timeframe.

30. The Cable Carriers note that this alternative solution was criticized in responses to interrogatory by various ILECs and certain interested parties.

31. For example, Bell Canada submitted that,

“There would be a very real potential that these redirected calls would not be of a short duration due to the need for accurate registration of the customer’s location and the irritation that such calls would cause. Customers would be inclined to complain or express their disagreement with being subjected to such a process and would want the operator to connect them to their intended call.”¹²

32. The argument that the accurate registration of the customer’s location might take some time and be an irritant to the customer is no argument at all. Bell has forgotten that this action is precisely what VoIP customers are supposed to do today, specifically, to update their location information. The customer’s experience as a result of implementation of the IP Tracker solution would reflect the nature of the service the customer has purchased. Customers of nomadic VoIP services already have a responsibility to inform their service provider when they move their VoIP device from one address to another. The proposed Canadian i2 Architecture attempts to circumvent this customer

¹² The Companies(CRTC)28Aug09-1

involvement by assuming that the underlying network knows an end-user terminal's location. However, as mentioned above, it fails to function with certain network types (e.g. fixed wireless networks) and configurations (e.g. use of remote virtual private networks), and has not even been evaluated for use with other network types (e.g. MPLS).

33. Secondly, Bell argues that the alternative is,

"(...) technically impossible for a given VISIP to ascertain that a material change has occurred in a given ASP's network since it does not have inner views of all the 230¹³ ASP networks in Canada."¹⁴

34. The Cable Carriers submit that Bell misunderstands the mechanics of the alternative proposed by Rogers. The VISIP does not require visibility into all 230 ASP networks in Canada. All the VISIP has to do is review the IP Address assigned to the MAC of their Analog Terminal Adaptor that must be used by their customer. When this address changes materially the location update call is forced. Indeed, the very reference to 230 ASP networks highlights the enormity of implementing the proposed Canadian i2 Architecture supported by Bell and the associated high costs and lengthy deployment time frames.

35. Thirdly, Bell argues,

"[The IP Tracker solution] is predicated on architecture and assumptions only applicable to cable networks that are not possible in a DSL environment."

36. The Cable Carriers understanding of the Bell position is that, unlike in the case with cable high-speed networks, its underlying DSL network does not associate IP Addresses with small geographical areas. The Cable Carriers make two submissions in response. First, if the ILECs believe that their networks will not support the IP Tracker alternative then they should be

¹³ Commission estimate per paragraph 15 of TNC 2009-194

¹⁴ The Companies(CRTC)28Aug09-2

permitted to implement their preferred solutions for themselves, without the imposition of unnecessary costs on the cable industry. Secondly, the Cable Carriers submit that a small re-architecting of DSL service in regard to IP Address assignment to accommodate the IP Address Tracker solution would be much more economical than deployment of the proposed Canadian i2 Architecture.

37. Finally, Bell submits that,

(...) "the solution is not deterministic; at the most it uses thin heuristics to infer that the location of an IP device has changed." ... In essence, Rogers is assuming that any new IP address lease or IP address assignment triggered by a modem reset or normal IP address lease assignment, will be disregarded as an immaterial change. The Companies strenuously object to this arrangement since a wireless hotspot, hotel or residential Internet subscriber served by the same ISP would likely use similar IP address ranges. If implemented, this would ultimately result in E9-1-1 calls to PSAPs with the wrong address."

38. Once again, Bell has misunderstood the mechanics of the alternative. The alternative does not assume that any new IP address lease or IP address assignment triggered by a modem reset or normal IP address lease assignment, will be disregarded as an immaterial change as asserted by Bell. To the contrary, IP Addresses that change materially will be force routed to the nomadic 911 Call centre.

39. The Cable Carriers acknowledge that there may be the rare instance where a change in location is not captured by the IP Tracker solution. Rogers described the circumstance as follows in its submission:

"It is possible, but not probable, that a customer could move their VoIP ATA across the street to a neighbour's home with the IP Tracker not recognizing this as a material change. Therefore, the location information would not be updated unless the customer themselves initiated the address change. However, this scenario is statistically improbable as the customer and the neighbour would

have to subscribe to the same ISP and be on the same segment and with the identical home router configuration.”¹⁵

40. Comwave makes similar arguments in regard to the deficiencies of the IP Tracker solution. The Cable Carriers acknowledge that the proposal is not perfect. However, it is disingenuous for Comwave to categorically reject the proposal as inadequate and to promote the adoption of the proposed Canadian i2 Architecture or the real-time query models as no costs are incurred by the VoIP operators with these latter proposals.
41. In summary, it is impossible to disregard the advantages of cost and time-to-implement that are inherent in the “IP Tracker” solution. Given that the nomadic VoIP 911 service the Commission wishes to implement – whether Canadian i2 or an alternative solution – is intended as an interim solution until Next Generation 9-1-1 (NENA i3) is deployed, the Cable Carriers submit that cost and time to implement are the two most critical factors involved in determining which solution should be deployed.

Real-Time Query Alternative

42. The second alternative proposed by the Cable Carriers is a real-time query solution. The Cable Carriers present three slightly different arrangements but are substantively the same in concept. Under each arrangement, the Cable Carriers would provide the location information related to a VoIP 911 call on a query basis. This alternative is much less costly as it does not require large redundant LIS’s hosted by the ILEC and cable carriers and the daily transfer of millions of records. Rather, the cable companies will query their existing systems when a VoIP 911 request is received, associate the IP Address with the MAC and civic address and return the information to the ILEC.

¹⁵ Rogers August 7, 2009 Submission, Attachment 2, para 21

43. While more attractive than the proposed Canadian i2 Architecture, the real-time query proposal remains expensive and would require significant time to implement while not addressing a significant portion of the VoIP market as illustrated earlier in this submission.

44. In their interrogatory responses Bell Canada and TELUS have criticized the real-time query alternative on four grounds:

- a. “the Cableco’ proposed ILEC LIS has nothing in common with the Companies ILEC-hosted LIS and constitutes a “cable only” solution that is incompatible with other broadband network architectures.”¹⁶
- b. “the Wiremap creation process has always been defined as an LDP function happening prior to 9-1-1 calls being made. Here the Cablecos are proposing the Wiremap creation process to be performed during 9-1-1 calls.”¹⁷
- c. the proposal adds several steps which needlessly increases delays related to handling 9-1-1 calls and introduces the opportunity for system breakage, and¹⁸
- d. more interconnection facilities will be required.¹⁹

45. In response to the first criticism, the Cable Carriers do not consider that a real-time query model is a “cable only” solution. The same “pull” approach can be applied by other ASPs allowing them to utilize their existing databases and eliminate the transfer of massive amounts of unneeded data to a duplicative data-base. The ILEC position appears to be that since the alternative is different than the proposed Canadian i2 Architecture, it should

¹⁶ The Companies-ASPs-ILECs(CRTC)28Aug09-1 and TELUS_ILEC(CRTC)28Aug09-2

¹⁷ Ibid

¹⁸ Ibid and TELUS_ILEC(CRTC)28Aug09-2

¹⁹ TELUS_ILEC(CRTC)28Aug09-1

be rejected. The ILECs appear to have forgotten that the Commission requested alternatives in this public notice.

46. The Cable Carriers submit that the second criticism suffers from the same flawed logic as the first criticism. The mere fact that the alternative differs from the previous proposal is not in itself a criticism of the alternative.

47. With regard to the third criticism, the Cable Carriers submit that concerns related to the latency performance of the real-time query model are unsubstantiated. Moreover, the proposed Canadian i2 Architecture does not reference any performance requirements per se. Therefore, the default standard is the NENA i2 model which defines an end-to-end requirement of 10 seconds from VSP Call Server receiving the call from the VEP to call setup. The cable carriers submit that the incremental latency associated with the real-time query model will not add additional time such that the 10 second latency target defined in NENA i2 would be violated. The additional steps occur in fractions of seconds as they are performed by machines. Moreover, the Cable Carriers believe the real time query model better aligns to the underlying motivating drivers behind ESC0283, that being the provision of accurate location information in a timely manner.

48. In contrast to the NENA i2 model that operates with time lags, a real-time query model essentially eliminates the probability of providing inaccurate location information since it will be retrieving the information from the data sources. This eliminates the need to replicate and store data in multiple locations and rely on unreliable processes to maintain database synchronization between the data source and the data replication location(s). This is important because, ESC0283 clearly states that it is preferred to

provide no location information than to be provided with inaccurate information.²⁰

49. In the event there is a failure in the real time query process, there will be no location information provided. However, the emergency call will still be processed. Bell Aliant/Bell Canada/Telebec appear to be under the misconception that introducing multiple steps in the real time query model will increase "exponentially the risks of 9-1-1 call failures". If there is a failure in the location lookup process, then the location object will be empty, however, the call can still be processed. The call does not fail, although it will be missing the location information which will require the person to provide the location information verbally. There is a degree of risk that the person will be unable to communicate their location, however, there is also risk in conveying the wrong information. This directly aligns with the expected behaviour stipulated in ESC0283.

50. In contrast, the approach contained in the proposed Canadian i2 Architecture of pushing replicated data from the Cable Carrier's LDP to the ILEC LIS provides a significant risk that the incorrect location information will be provided which contradicts the expected behaviour stipulated in ESC0283. The main source of inaccurate information would be the lag between database synchronization and the number of databases involved in the synchronization process. The Cable Carriers have the original data sources (DHCP and Back Office). This data is replicated in the ASP LDP and then again replicated in ILEC LIS. In the real time query model, the data is not replicated in both the LDP and LIS, thereby avoiding synchronization issues.

²⁰ See ESC0283, section 7.1.3, pg 31 "The LIS should have proper mechanisms to ensure those failure scenarios do not result in a wrong address being provided. It may be better not to provide any location than to provide a wrong one. This consideration applies to all LIS models discussed above."

51. Cogeco submitted a real-time query variant that dispenses with the ILEC LIS from the Cable Carrier perspective by submitting the civic address information directly to the S1 Serving Router. The other Cable Carriers have reviewed this approach and are confident that they, too, can implement this direct approach. Rogers, upon review, believes that the Cogeco direct option is optimal since it eliminates the need for any large (i.e., costly) databases (LIS, LDP) to be maintained by the ASPs or ESPs. This direct option therefore is less complicated (i.e. fewer points of failure, less delay in call processing, etc).

52. TELUS submitted “because the LIS will no longer be centralized by the ILEC, there will be significantly greater interconnection requirements”.²¹ The Cable Carriers disagree. Whether a real time query model (pull) or push model (ILEC LIS) is implemented the interconnection requirements would fundamentally be the same. Under each of the proposed Canadian i2 Architecture, direct real-time query model (information provided to the S1 Serving Router) or the LIS real-time query model (information provided to ILEC LIS) an interconnecting facility between each ASP and each ILEC is required.

53. In summary, in regard to the criticisms of the real-time query model, the increased latency is insignificant and the solution is actually more reliable than with proposed Canadian i2 Architecture since the location information provided will be more accurate. If a location query failure occurs during call processing no location information will be sent (per ESC0283), however, the emergency call will still be processed. And very importantly, the costs of the real-time query model are significantly lower than the costs of implementing the proposed Canadian i2 Architecture. The costs of the real-time query

²¹ TELUS_ILEC(CRTC)28Aug09-1

model submitted by the four large cable companies of \$37 million is \$17 million lower than the costs of the proposed Canadian i2 Architecture implementation of \$54 million for these companies alone. The Cable Carriers however re-iterate that the CRTC should not proceed with the implementation of the proposed Canadian i2 Architecture, or the alternatives noted above, at this time for the reasons explained in the first section of this submission. Should the Commission decide to proceed then the Cable Carriers submit that the IP Tracker approach be implemented to enhance the existing nomadic VoIP 911 requirements.

Cost Recovery

54. At paragraph 30 of TNC 2009-194, the Commission invites interested parties to address the matter of who should pay for the various costs of implementing the nomadic VoIP E9-1-1 service, including providing their views on the specific issues set out in Appendix 2 of the Notice.

55. Appendix 2 of the Notice identifies three categories of cost elements involved in the implementation of VoIP E9-1-1 service: (i) ASP network elements, most notably the LDP; (ii) ILEC network elements, most notably the LIS; and (iii) interconnection elements, which can be further subdivided into ASP-to-ILEC interconnection elements and VSP-to-ILEC interconnection elements. The Commission invites interested parties to address the policy implications of a requirement that implementation of each of these cost elements be recovered over (a) each ASP's respective high-speed Internet client base; (b) all Canadian nomadic VoIP users; (c) all Canadian E9-1-1 users; and (d) all Canadian E9-1-1 users excluding wireless subscribers. Parties supporting an LDP cost recovery scenario other than where ASPs are each responsible for their own LDP costs are then asked to address the following: (a) how each ASP's LDP costs would

be assessed and verified; (b) the basis upon which revenues would be collected; (c) the basis upon which revenues would be distributed; and (d) how and by whom the collection and distribution of revenues would be administered.

56. From the earliest stages of the current proceeding, not to mention throughout the CISC discussions that preceded TNC 2009-194, the Cable Carriers have individually and collectively argued that the benefits of nomadic VoIP E9-1-1 service accrue exclusively to nomadic VoIP service providers and their customers. The most elemental concepts of cost causality dictate that the entire cost of Nomadic VoIP E9-1-1 service should be borne exclusively by nomadic VoIP E9-1-1 service providers and their customers.

57. At no time throughout the current proceeding has any evidence of any kind been put forward to suggest that the broader base of Internet access service customers, that is to say the base of Internet access service customers who choose not to subscribe to a nomadic VoIP service, see any value having their underlying carrier make the investments being considered in this proceeding. The same can be said for the broader base of Canadian E9-1-1 users, be they wireline or wireless.²² As none of these categories of users see or receive any benefit from the nomadic VoIP E9-1-1 service, they should not be required to pay for it.

58. The Cable Carriers submit that, if the Commission proceeds with mandating the implementation of the proposed Canadian i2 Architecture, the most direct and most efficient mechanism for the nomadic VoIP service providers to

²² In the Cable Companies 9 July 2008 Final Comments, paragraphs 51 to 57, Cogeco proposed to spread the ASP costs out to all wireline and wireless E9-1-1 subscribers, at a minimum, if the Commission abdicates applying its own tariff setting rules and agrees with the ILECs that the best way to fund the development and implementation of the Canadian i2 architecture is to spread the costs over more than the Nomadic VoIP subscribers who cause the costs. However, to be clear, Cogeco's position has always been that such a cost recovery approach would bring no tangible benefit to these subscribers and would not be competitively neutral.

compensate other carriers (ASP or ILEC) for the investments made to provide a nomadic VoIP E9-1-1 service on their behalf would be for the nomadic VoIP service providers to form an industry consortium for this purpose, along the model of the Canadian LNP Consortium Inc. (the CLNPC). The role of the consortium would be to accept audited statements of eligible expenditures from ASPs and ILECs, and to reimburse ASPs and ILECs for these expenditures. All eligible expenditures, up-front or ongoing, would be reimbursed as they are incurred. All nomadic VoIP service providers would be required to become members of the consortium, and to finance its activities on a basis (revenue, subscribers, or other) to be established by the consortium. A broader industry group, most likely under the auspices of CISC, would also be formed to establish the precise definitions of eligible expenditures, and the precise methodology by which these expenditures would be measured and audited.

59. For greater clarity, eligible ASP expenditures would include capital (including development and integration work) and operations expenditures for all nomadic VoIP E9-1-1-related ASP network elements and ASP-to-ILEC interconnection elements. Eligible ILEC expenditures would include capital (including development and integration work) and operations expenditures for all nomadic VoIP-related ILEC network elements. VSP-to-ILEC interconnection elements would be the responsibility of the individual VSPs.

60. Whether nomadic VoIP service providers would be required to apply a pre-determined nomadic VoIP E9-1-1 service fee to their subscriber bills, or simply to remit their apportioned financial contribution to the consortium, would be a matter for the members of the new nomadic VoIP E9-1-1 consortium to decide. As long as the Cable Carriers are reimbursed for their eligible expenditures, they have no view on this matter.

61. In *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, P.C. 2006-1534, 14 December 2006 (the Policy Direction) the Governor in Council directed the Commission to rely on market forces to the maximum extent feasible as the means of achieving the telecommunications policy objectives. Furthermore, when relying on regulation, the Governor in Council directed the Commission to use measures that, if they are of an economic nature, neither deter economically efficient competitive entry into the market nor promote economically inefficient entry, and, if they are not of an economic nature, to the greatest extent possible, are implemented in a symmetrical and competitively neutral manner.

62. The Cable Carriers submit that any attempt to impose an alternative cost recovery model which transfers the costs of the nomadic VoIP E9-1-1 system onto the shoulders of the broader ASP customer base or the broader E9-1-1 user base (wireline or wireless) would violate the Policy Direction. To the extent such a cost transfer is motivated by economic considerations related to the viability of the nomadic VoIP industry, it would violate the provision against measures that promote economically inefficient entry. To the extent such a cost transfer is motivated by non-economic considerations related to 9-1-1 service quality, it would violate the principle of competitive neutrality, as it would require one or more classes of local service providers to subsidize a competing class, namely those who employ nomadic VoIP technology.

63. Were the Commission to nevertheless insist on the transfer of some or all of the costs of nomadic VoIP E9-1-1 service onto the shoulders of the broader ASP customer base or the broader E9-1-1 user base, it would be entirely reasonable to expect the affected ASPs, local service providers and/or wireless service providers to convert the transferred costs into an explicit charge to be placed on customer bills, thereby informing customers of the subsidy they are being required to make to the nomadic VoIP industry.

Conclusions

64. In conclusion, the Cable Carriers submit that the CRTC should not proceed with the implementation of the proposed Canadian i2 Architecture, or the alternatives noted above, at this time. The research conducted by LYA demonstrates that the market for Nomadic VoIP services is considerably smaller than originally thought and is in decline, being eclipsed by the rapid adoption of wireless services and soft clients, such as Skype, used on laptops and smartphones. In addition, the volume of 911 calls from Nomadic VoIP subscribers to PSAPs is infinitesimal in comparison with the calls received from subscribers using wireless devices.

65. The Cable Carriers submit that, as evidenced by the CableLabs Report, the proposed Canadian i2 Architecture is in serious danger of becoming outdated as it does not consider the coming change from IPv4 to IPv6 for the attribution of IP addresses nor does it adequately accommodate a series of other common IP address deployment scenarios.

66. The Cable Carriers have proposed two alternatives for the Commission's consideration – the Real-Time Query method and the IP Tracker. The Real-Time Query method does not resolve the IP addressing problems described above, but at least has the merit of reducing implementation costs for the proposed Canadian i2 Architecture, should the Commission decide that implementation must proceed. The IP Tracker, for its part, is a viable enhancement to the current interim solution, which would dramatically reduce costs, all the while imposing the effort of implementation squarely on those who stand to benefit from the Commission's action, namely the Nomadic VoIP service providers.

67. Finally, regarding cost recovery, the Cable Carriers maintain that, if the proposed Canadian i2 Architecture is implemented, the Nomadic VoIP service provider industry must assume the costs of any solution since it is being developed to improve their service offering to their customers. If, however, the Commission wishes to impose any implementation costs on a wider base of customers in the Canadian telecommunications industry, then the Cable Carriers submit they will be compelled to identify a specific charge on their service bills to clearly indicate the amount of the charge, and who is benefiting from such monies.

**Annex A – LYA Report, “Access Independent VoIP Penetration and
Nomadic Usage in Canada”**

**Annex B – CableLabs Report, “Analysis of Canadian i2 Location
Determination and Delivery Model”**